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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,288	07/14/2003	Mahadeva P. Sinha	06618-914001/CIT-3721	7721

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FISH & RICHARDSON, PC
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
ROY, SIKHA	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No.	Applicant(s)	
	10/620,288	SINHA, MAHADEVA P.	
	Examiner	Art Unit	
	Sikha Roy	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-4,9,11-13,21 and 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-4,9,11-13,21 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 22, 2005 has been entered.

The amendment to Specification and New drawings of Figs. 1 and 3 submitted on October 26, 2005 have been entered and are approved by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2,3,9,11,21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 2,993,638 to Hall et al.,and further in view of U.S. Patent 3,460,745 to Lamont.

Regarding claim 21 Hall discloses (Figs. 15 column 9 lines 3-5, column 10 lines 51 through column 11 line 37) an ion pump comprising plurality of anodes 18 which are substantially cylindrical and having first and second open ends, a combined housing

and cathode structure 25 (cathode comprising plurality of cathode plates lining the rectangular vacuum envelope) formed of cathode material, forming vacuum tight seal and having a hollow conduit 2 for connection to the vessel to be evacuated, the housing and cathode structure forming plurality of surrounding surfaces that surround the anodes 18 on all sides of the anodes and having plurality of extending surfaces (cathode rods)73 extending into the vacuum tight sealed area and into insides of the anodes from cathode surfaces 25, a magnet 27 surrounding at least a portion of the cathode and housing structure and a connection (conductive rod) 19 for voltage source which allows pumping by the ion pump.

Hall does not exemplify the cathode structures having extending surfaces into insides of the anodes from both first and second open ends.

Lamont in same field of endeavor discloses (Fig. 3 column 3 lines 1-15) cathode plates comprising projections 6 such as cylindrical posts extending towards the anode 4 from both the open ends of the anode. Lamont further teaches (column 2 lines 24-43) this configuration provides sputtering taking place from both ends and sides of the post whereby the pumping speed is increased.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include the plurality of cathode structures of Hall extend from both the first and second open ends of the anode as taught by Lamont for increasing the pumping speed of the pump.

Referring to claim 2 Hall discloses (column 5 lines 23-35) the housing and cathode structure 25 formed of titanium.

Regarding claim 3 Hall discloses (column 5 lines 60-66) the magnet 27 is formed of substantially C (horse-shoe) shape.

Regarding claim 9 Hall discloses (Fig. 1 column 10 lines 67-70) the ppump further comprises a source of DC positive potential applied to the anode 18 and the cathode plates 25 coupled to the rectangular housing are connected to ground potential.

Regarding claim 11 it is clearly evident from Fig. 15 that the magnetic field provided by magnet 27 extends along a direction that is co-axial with the axis of the anodes 18.

Regarding claim 22 Hall discloses (column 10 lines 55-61) both the housing (lining of the envelope) 25 and the plurality of extending surfaces 73 are both made of cathode material, titanium.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 2,993,638 to Hall et al., U.S. Patent 3,460,745 to Lamont and further in view of U.S. Patent 5, 689, 070 to Clark et al.

Regarding claim 4 Hall and Lamont do not exemplify the magnet formed of one of vanadium permendur magnetic material.

Clark in pertinent art of electromagnetic acoustic transducer discloses (column 5 lines 19-30) the core formed of magnetic material such as vanadium permendur. Clark further notes that this configuration of the core made of vanadium permendur has high magnetic permeability and high saturation magnetization and hence provides strong magnetic saturation field.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include the permanent magnet in the ion pump of Hall and Lamont made of vanadium permendur as taught by Clark for providing strong magnetic field resulting in excellent operation of the ion pump.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 2,993,638 to Hall et al. U.S. Patent 3,460,745 to Lamont and further in view of U.S. Patent 5,525,799 to Andresen et al.

Regarding claim 12 Hall and Lamont are silent about a GCMS system receiving its vacuum from the ion pump.

Andresen in relevant art discloses a GCMS system having an ion pump attached, for removing trace of gas impurities.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include a GCMS system attached with the ion pump of Hall as suggested by Andresen for removing trace of gas impurities from the GCMS system.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 2,993,638 to Hall et al. U.S. Patent 3,460,745 to Lamont and further in view of U.S. Patent 6,805,980 to Uehara.

Regarding claim 13 Hall discloses a permanent magnet providing the magnetic field. Hall does not explicitly disclose the magnet formed of high energy product value magnet.

Uehara in pertinent art of thin film magnet production discloses (column 1 lines 15-25) thin film permanent magnets formed of Nd-Fe-B based magnetic material and Sm-Co based magnetic material yield high magnetic energy product and therefore can be used in a miniaturized electrical apparatuses.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to substitute thin film high magnetic energy product value magnet as taught by Uehara for the permanent magnet in the ion pump of Hall and Lamont for providing high magnetic energy and enhanced performance with reduced weight of the ion pump.

Response to Arguments

Applicant's arguments with respect to claim 21 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's argument that Hall does not teach cathode material that forms vacuum tight seal and has connection for vessel to be evacuated the examiner respectfully disagrees. Hall discloses (column 5 lines 23-42) the cathode plate 25 mechanically locked together with the vacuum tight envelope 20 thus forming the vacuum tight combined housing and has a hollow conduit 2 connecting the pump to the structure it is desired to evacuate.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (571) 272-2463. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sikha Roy

Sikha Roy
Patent Examiner
Art Unit 2879